



# Areawide Stored Grain IPM

## Project Objectives

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The objective of the Area-wide stored grain IPM project is to determine whether insect pest management can be done more effectively and at lower cost when insects are managed throughout a network of elevators. Areawide IPM is particularly important for stored wheat because insects are moved through the marketing system along with the grain. If insects are not controlled at one location, they can be spread to many other locations, which increases the cost of pest management. Shortly after harvest in 1998, we started sampling grain at your elevators for insects and collecting information on pest management practices and costs. We appreciate very much your allowing us to study pest management at your elevator. We hope that the information we share with you helps you to reduce costs and improves the effectiveness of your current pest management programs.

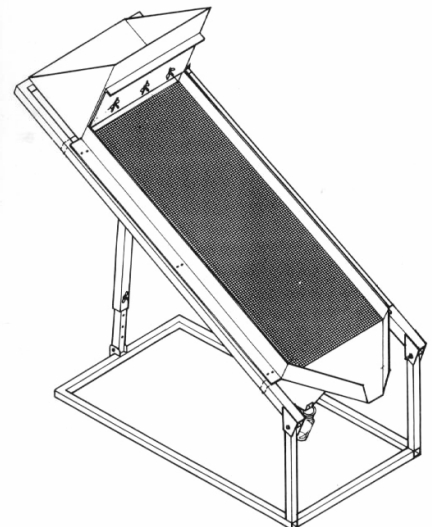


### True or False?

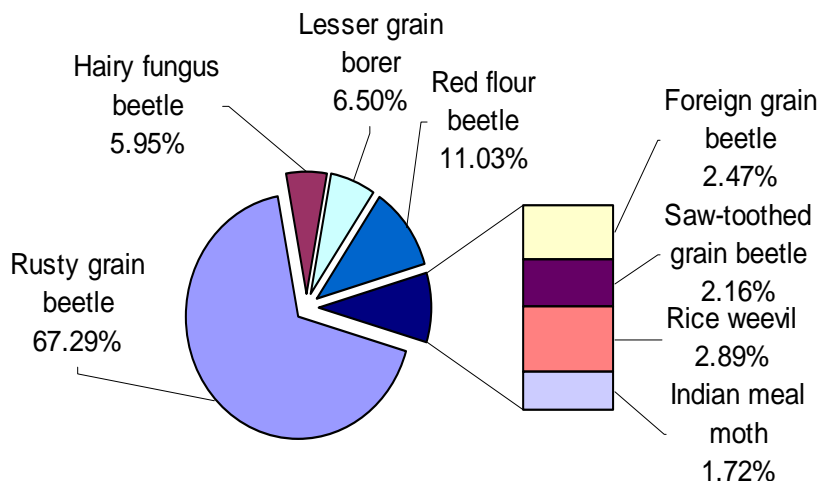
- 1) Beetle developmental rate can be cut in half by reducing grain temperature 10 degrees.
- 2) Cool grain must be fumigated longer to kill all stages of insects.
- 3) The larval and adult insect stages are the most resistant to phosphine.

## Methods

The inclined sieve that we are using is pictured on the right. The sieve collapses so that it can be carried in the manlift. The inclined sieve allows us to rapidly separate the insects from 1 gallon samples of grain so that we can leave the grain at the elevator and carry away only the insects. This is important because we are taking a 1-gallon grain sample from each 300 bushels of grain. Looking at so much grain allows us to detect low levels of insect infestation.



## What we learned



Of the 5345 samples that we have taken, 63% had no insects. The majority of the infested samples had fewer than two insects per kilogram. In the samples with insects, four species were quite common. The rusty grain beetle was by far the most common insect found (67.3%). Of the insects that cause IDK, the lesser grain borer was fairly common (6.5%), while the rice weevil was less common (2.9%).

## Plans for the future

We would like to compare aeration using the traditional manual method with aeration using automatic aeration controllers. Aeration controllers allow grain to be cooled earlier in the storage season by turning on aeration fans whenever outside temperatures are cooler than the grain. Early in the summer, nighttime air temperatures are often cooler than the grain. The aeration controllers operate the aeration fans during cool hours. Reducing grain temperatures by only 10°F, from 85°F to 75°F, can cut in half the insect population growth rate.



## Personnel

Skip Allen is the technical manager for this project in Kansas. Skip Allen was an elevator superintendent at Zenith Coop Grain for 6 years. He was able to reduce his use of fumigation through effective use of aeration. Skip is married and has 2 daughters. He has farmed for 9 years, worked for Kansas State Grain Inspection Department for 6 years, managed Stafford Seeds Corporation for 7 years and ran Stafford Co-op. feed mill and elevator for 2 years.



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